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HENN, TIMOTHY J				
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**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

# Office Action Summary

**Application No.**

10/008,077

**Applicant(s)**

AAGAARD ET AL.

**Examiner**

Timothy J. Henn

**Art Unit**

2622

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 25 November 2009.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1,2,4,7-43,80-98 and 100 is/are pending in the application.
- 4a) Of the above claim(s) 80-98 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1,2,4,7-43 and 100 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 08 November 2007 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_

## **DETAILED ACTION**

### ***Response to Arguments***

1. Applicant's arguments with respect to the claims have been considered but are moot in view of the new ground(s) of rejection.
2. In response to applicant's argument that the examiner's conclusion of obviousness is based upon improper hindsight reasoning, it must be recognized that any judgment on obviousness is in a sense necessarily a reconstruction based upon hindsight reasoning. But so long as it takes into account only knowledge which was within the level of ordinary skill at the time the claimed invention was made, and does not include knowledge gleaned only from the applicant's disclosure, such a reconstruction is proper. See *In re McLaughlin*, 443 F.2d 1392, 170 USPQ 209 (CCPA 1971).

### ***Claim Rejections - 35 USC § 103***

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.
4. Claims 1, 2, 4, 7-9, 31-40, 42 and 43 are rejected under 35 U.S.C. 103(a) as being unpatentable over Anderson (US 5,714,997) in view of Paff (US 5,164,827) in view of Kochanski et al. (US 7,046,812) in view of Fergestad et al. (WO 01/10517 A1) in view of Holberg (US 6,072,571).

**[claim 1]**

Regarding claim 1, Anderson discloses a multiple camera video system comprising: a plurality of cameras (Figure 4, Item 112) and a plurality of microphones (Figure 4, Item 122) positioned around a scene (Figure 1); a storage device for storing image and audio data (Figure 1, Items 13-15); a system for combining audio from the microphones (Figure 17A; c. 2, ll. 35-47). However, Anderson does not explicitly disclose that each camera has an associated microphone. Official Notice is taken that it is notoriously well known in the art to provide cameras with built-in microphones. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to include the microphones of Anderson along with the cameras to reduce the total number of components which must be installed at the live-action event prior to recording. Anderson further discloses that it would be beneficial to change the positions and orientations of the cameras and microphones while recording (c. 12, l. 66 - c. 13, l. 9; c. 23, ll. 5-12) but does not disclose a system for achieving such a feature.

Paff discloses a similar recording system in which a plurality of cameras is placed around a scene (Figure 1). In the system of Paff, the plurality of cameras are segmented into a master camera and a plurality of slave cameras (Figure 6) and further includes a monitoring station which controls the master camera's pan, tilt and zoom variables (Figure 6, Items 10 and 11). In response to changing the master camera's field of view, the slave cameras correspondingly change their own field of view (c. 4, l. 6 - c. 5, l. 17; c. 7, l. 67 - c. 8, l. 15). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to include a monitoring

station and divide the plurality of cameras of Anderson into a master camera and a plurality of slave cameras to allow the cameras to change their fields of view while recording the live event and to ensure that every camera is trained on the same subject without manually changing the pan, tilt and zoom values of each camera individually. The examiner notes that Paff uses parameters of the master and slave cameras to dynamically position the slave cameras based on changes in the master cameras field of view (e.g. c. 4, ll. 43-61) and further ensures that the magnification of the master camera and the slave camera is approximately the same (c. 7, l. 66 - c. 8, l. 15). However, Anderson in view of Paff does not specifically disclose overlaying the sounds from each microphone in the same moment of time based on the speed of sound and a distance from each of the microphones to the target.

Kochanski discloses a system for combining the output from multiple microphones in which the audio signals from each microphone are delayed based on the speed of sound and a distance to the target object from the microphone (e.g. c. 1, ll. 11-16; c. 6, ll. 26-65). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to delay the audio signals and overlay them as described by Kochanski in the system of Anderson in view of Paff to create an audio signal in which the focal volumes are added and signals from else where are canceled out. However, while Anderson in view of Paff in view of Kochanski discloses a multiple camera video system including master and slave cameras which point at a target, Anderson in view of Paff in view of Kochanski does not disclose an RF transmitter which transmits positional coordinates to a master monitoring unit.

Fergestad discloses a system for tracking objects during an event wherein RF transmitters are attached to objects such as players or a ball (Figure 1; p. 10, ll. 5-12). The RF transmitters send positioning data to a central unit (Figure 1, Item 20; p. 10, ll. 23-29) which processes the received signals and outputs guidance information to cameras which are filming the event so that the cameras may be automatically guided to track chosen objects (p. 11, ll. 20-26). Therefore, it would be obvious to include an RF transmitter that transmits position data and to receive the data as claimed so that automatic tracking of objects in the field of view of the Anderson in view of Paff in view of Kochanski may be performed.

Fergestad discloses a receiver which is a "multi channel radio transceiver" (p. 10, ll. 25-26), but does not explicitly state that the RF transmitters attached to different targets transmit over different carrier frequencies. Official Notice is taken that when using multiple transmitting device it is well known in the art to use different frequencies or "channels" to transmit from each device to prevent interference from occurring between the devices and to easily identify which device is sending the signal. Therefore, it would be obvious to use different carrier frequencies as claimed to prevent interference between the RF transmitter devices. However, while Anderson in view of Paff in view of Kochanski in view of Fergestad discloses a system in which multiple objects may be tracked, the combination does not disclose a plurality of function keys, each key associated with one of the plurality of targets, whereby activating a function key automatically controls the plurality of cameras to focus on the associated target.

Houlberg discloses a video tracking system for tracking a target in which an object to be tracked can be selected using function keys, wherein each key is assigned to an object to be tracked (e.g. c. 9, ll. 55 - c. 10, l. 2). This allows for rapid selection of an object to be tracked through direct access to different objects using the keyboard. Therefore, it would be obvious to assign keys to objects to be tracked in the system of Anderson in view of Paff in view of Kochanski in view of Fergestad, and to allow selection of the objects using their assigned key as taught by Houlberg.

**[claim 2]**

Regarding claim 2, Paff discloses a master pan head which is remote from the plurality of cameras (Figure 6).

**[claim 4]**

Regarding claim 4, Paff discloses a master pan head including a zoom adjustment (Figure 6, Item 16).

**[claim 7]**

Regarding claim 7, Paff discloses a plurality of robotic pan heads upon which each of the plurality of cameras is mounted for remotely controlling said plurality of cameras (Figure 6; c. 3, ll. 58-62).

**[claim 8]**

Regarding claim 8, Paff discloses robotic pan heads including a pan and tilt function (Figure 6, Items 13 and 14).

**[claim 9]**

Regarding claim 9, Paff does not specifically disclose pan and tilt axes of the robotic pan heads which intersect at a point within the body of the plurality of cameras. Official Notice is taken that it is notoriously well known in the art to include pan and tilt axes of pan/tilt heads which intersect at a point within the body of the camera to allow independent control of pan and tilt functions of the cameras. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to include pan and tilt axes which intersect at a point within the body of the slave cameras to allow independent control of the plurality of cameras.

**[claim 31]**

Regarding claim 31, Paff discloses a communications medium coupling the plurality of cameras to the master monitoring unit (Figure 6).

**[claims 32 and 33]**

Regarding claims 32 and 33, Anderson in view of Paff in view of Kochanski does not disclose a communication medium which is a multi-mode fiber optic cable. Official Notice is taken that the use of multi-mode fiber optic cable is notoriously well known in the art to provide large bandwidth. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to use multi-mode fiber optic cable as the communication medium of Anderson in view of Paff in view of Kochanski to obtain a system with a large amount of bandwidth.

**[claims 34 and 35]**

Regarding claims 35 and 35, Anderson in view of Paff in view of Kochanski does not disclose a communications medium which is a triaxial cable wherein a semiconductor in



the triaxial cable is used to modulate camera telemetry information and the captured image. Official Notice is taken that the use of triaxial cables is notoriously well known in the art to provide low loss and good shielding properties. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to use a triaxial cable and a semiconductor medium within the triaxial cable to modulate the camera telemetry information and the captured image data to provide a communications medium with low loss and good shielding.

**[claim 36]**

Regarding claim 36, Anderson in view of Paff in view of Kochanski does not disclose a communications medium which is a wireless RF connection. Official Notice is taken that the use of wireless RF connections is notoriously well known in the art to not require large amounts of cables to be run. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to use a wireless RF connection to avoid running large amounts of cables.

**[claim 37]**

Regarding claim 37, Anderson discloses a computer (Figure 3, Item 14). The examiner notes that a "cam-A computer" is not a term well known in the art nor is it described in the application to any degree which would define the term to require a specific structure. Therefore, any normal computer can be considered a "cam-A" computer for the purposes of art rejection.

**[claim 38]**

Regarding claim 38, Anderson discloses a microphone computer for combining the outputs of the microphones (Figure 17A).

**[claim 39]**

Regarding claim 39, Anderson discloses the use of directional microphones (c. 21, ll. 48-57).

**[claim 40]**

Regarding claim 40, Anderson discloses microphones which are spaced around a target object which is being recorded (c. 21, ll. 48-57).

**[claim 42]**

Regarding claim 42, Kochanski discloses using the "speed of sound" to determine the proper delay for each microphone (c. 6, ll. 26-35). Since the speed of sound inherently changes with changes in altitude and relative humidity, it would be obvious to one of ordinary skill in the art to use and adjust the speed of sound taken at set conditions for pressure and humidity to account for the changes at different pressures and humidity levels to obtain a more accurate result.

**[claim 43]**

Regarding claim 43, Anderson discloses an output of each of the microphones being connected to a digital mixer which is controlled by the microphone computer (Figure 17A).

5. Claims 10-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Anderson (US 5,714,997) in view of Paff (US 5,164,827) in view of Kochanski et al. (US

7,046,812) in view of Fergestad et al. (WO 01/10517 A1) in view of Holberg (US 6,072,571) in view of Heidmann et al. (US 6,057,833).

**[claim 10]**

Regarding claim 10, Anderson in view of Paff in view of Kochanski in view of Fergestad discloses a system connected to the master monitoring unit which allows for control over camera functions (Paff; Figure 6, Item 11), but does not disclose a station which is a paint station. Heidmann discloses that the value of television broadcasts can be increased by incorporating graphics illustrations using digital painting applications. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to include a digital painting application in the station of Paff to make the station of Anderson in view of Paff in view of Kochanski in view of Fergestad a "paint station" which can increase the value of the broadcasts created by the master and slave cameras.

**[claim 11]**

Regarding claim 11, Anderson in view of Paff in view of Kochanski in view of Fergestad in view of Heidmann discloses a paint station including a monitor (Figure 16, Item 11A); an input device (Figure 16, Item 11B) and a paint station computer running paint station software (Heidmann).

**[claim 12]**

Regarding claim 12, Anderson in view of Paff in view of Kochanski in view of Fergestad in view of Heidmann discloses a paint station which is capable of adjusting an attribute of at least one of the plurality of cameras (e.g. pan, tilt, zoom, generated

video).

**[claim 13]**

Regarding claim 13, Anderson in view of Paff in view of Kochanski in view of Fergestad discloses a paint station which can control zoom and focus (Figure 16). Heidmann discloses a paint station which can adjust attributes including red, green and blue (e.g. color) paint (Figure 2, Item 258). However, Anderson in view of Paff in view of Kochanski in view of Fergestad in view of Heidmann does not disclose a paint station which controls shutter and iris values. Official Notice is taken that it is notoriously well known in the art to allow control of shutter and iris values to properly control the exposure value of the camera. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to include shutter and iris control in the paint station of Anderson in view of Paff in view of Kochanski in view of Fergestad in view of Heidmann to properly control the exposure value of the master and slave cameras.

**[claim 14]**

Regarding claim 14, Paff discloses a station which can adjust the attribute on more than one of the cameras simultaneously (c. 7, l. 67 - c. 8, l. 15).

**[claim 15]**

Regarding claim 15, Paff discloses that the camera attribute can be adjusted while the camera telemetry is being automatically controlled by the master broadcaster computer (c. 7, l. 67 - c. 8, l. 15).

**[claim 16]**

Regarding claim 16, Paff discloses a paint station which is at least one-fifth of the number of cameras (Figure 6; claim 1).

6. Claims 17-30 and 100 are rejected under 35 U.S.C. 103(a) as being unpatentable over Anderson (US 5,714,997) in view of Paff (US 5,164,827) in view of Kochanski et al. (US 7,046,812) in view of Fergestad et al. (WO 01/10517 A1) in view of Holberg (US 6,072,571) in view of Kanade et al. (US 2002/0118286).

**[claim 17]**

Regarding claim 17, Anderson in view of Paff in view of Kochanski in view of Fergestad does not disclose a calibration station. Kanade discloses a similar system and further discloses that the cameras must be calibrated for focal length, zoom and geometric position prior to operation (Paragraphs 0032 - 0037). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to include a calibration station in the system of Anderson in view of Paff in view of Kochanski as taught by Kanade to properly calibrate the system so that the relationship of the cameras to the scene and to each other are known.

**[claims 18-20]**

Regarding claims 18-20, see claim 17.

**[claim 21]**

Regarding claim 21, see Figure 6 and claim 1 of Paff.

**[claim 22]**

Regarding claim 22, Anderson in view of Paff in view of Kochanski in view of Fergestad lacks at least one additional video storage device. Kanade discloses a similar system and further discloses video storage devices coupled to each camera (Figure 2, Items 30). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to include video storage devices to allow storage of the video resulting from the cameras of Paff.

**[claim 23]**

Regarding claim 23, Anderson in view of Paff in view of Kochanski in view of Fergestad in view of Kanade lacks a video storage device which has a plurality of digital disc recorders. Official Notice is taken that it is notoriously well known in the art to record video from cameras onto digital video discs to allow easy transportation of the recorded video. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to make the plurality of video storage devices of Anderson in view of Paff in view of Kochanski in view of Kanade digital video disc recorders to allow easy transportation of the recorded video.

**[claim 24]**

Regarding claim 24, Anderson in view of Paff in view of Kochanski in view of Fergestad in view of Kanade lacks a video storage device which is a file server. Official Notice is taken that it is notoriously well known in the art to store video on file servers to allow remote access to the video. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to make the video storage devices of Anderson in view of Paff in view of Kochanski in view of Kanade file servers

to allow easy remote access to the recorded video.

**[claim 25]**

Regarding claim 25, Anderson in view of Paff in view of Kochanski in view of Fergestad lacks a digital router connecting the output of each of the plurality of digital recorders and a first slow motion controller. Kanade discloses including a video playback controller to the plurality of video storage devices through a router (Figure 2; Paragraph 0030). However, Anderson in view of Paff in view of Kochanski in view of Kanade lacks a playback controller which is a slow motion controller. Official Notice is taken that it is notoriously well known to include slow motion controllers to allow the option of viewing the video in slow motion. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to include a slow motion controller in the system of Anderson in view of Paff in view of Kochanski in view of Fergestad in view of Kanade to view the recorded video in slow motion.

**[claim 26]**

Regarding claim 26, Kanade discloses a controller which is capable of selecting a router output from the plurality of recorders (Paragraph 0030).

**[claim 27]**

Regarding claim 27, Kanade discloses a controller which is capable of controlling each of the plurality of recorders simultaneously (Paragraph 0030).

**[claim 28]**

Regarding claim 28, Anderson in view of Paff in view of Kochanski in view of Fergestad in view of Kanade does not specifically disclose a controller which is capable

of controlling the forward and backward motion of the output of each of the digital disc recorders. Official Notice is taken that it is notoriously well known in the art to allow both forward and backward motion to be played (e.g. play and rewind) to allow the user to view the video from a certain time period. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to make the controller capable of both forward and backward motion playback.

**[claims 29 and 30]**

Regarding claims 29 and 30, Anderson discloses a video system which broadcasts the captured video to a plurality of viewers (Figure 3, Item 50-1 through 50-p). Official Notice is taken that it is notoriously well known in the art for television viewers to record broadcasted signals in digital disc recorders including slow motion controllers for later replay and viewing. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to include a digital disc recorder for each of the television viewers which records the video produced by Anderson in view of Paff in view of Kochanski in view of Fergestad in view of Kanade to allow for later replay or viewing.

**[claim 100]**

Regarding claim 100, Anderson in view of Paff in view of Kochanski in view of Fergestad does not disclose storing a texture mesh of the scene. Kanade discloses performing a spin-image effect using a desired servo-fixation point (Paragraph 0042) and further discloses that determining the servo-fixation point can be made more accurate by using a triangulated mesh representing the real surface of the scene



(Paragraph 0042; i.e. a texture mesh of the scene). Therefore, it would be obvious to store a texture mesh as claimed so that an accurate determination of a servo-fixation point can be made when performing a spin-image effect using the system of Anderson in view of Paff in view of Kochanski in view of Fergestad.

### ***Conclusion***

7. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

- |     |               |                 |
|-----|---------------|-----------------|
| i.  | Limor et al.  | US 2002/0090217 |
| ii. | Larson et al. | US 5,363,297    |

8. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of

the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Timothy J. Henn whose telephone number is (571) 272-7310. The examiner can normally be reached on M-F 11-7.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Ometz can be reached on (571) 272-7593. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Timothy J Henn/  
Primary Examiner, Art Unit 2622